Note: This version of ASOP No. 7 is no longer in effect.
It was replaced in 2002 by ASOP No. 7, Doc. No. 089.

ACTUARIAL STANDARD OF PRACTICE NO. 7

ANALYSIS OF LIFE, HEALTH, OR PROPERTY/CASUALTY INSURER CASH FLOWS

Revised Edition

Developed by the
Cash Flow Testing Task Force of the
Actuarial Standards Board

Adopted by the
Actuarial Standards Board
September 2001

(Doc. No. 081)

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September 2001

TO: Members of the American Academy of Actuaries and Other Persons Interested in the Analysis of Life, Health, or Property/Casualty Insurer Cash Flows

FROM: Actuarial Standards Board (ASB)

SUBJ: Actuarial Standard of Practice (ASOP) No. 7

This booklet contains the final version of ASOP No. 7. The original title, *Performing Cash Flow Testing for Insurers*, has been changed to *Analysis of Life, Health, or Property/Casualty Insurer Cash Flows.* This standard, along with a revision of ASOP No. 22, now titled *Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers*, supersedes ASOP No. 14, *When to Do Cash Flow Testing for Life and Health Insurance Companies*, which has been repealed, all effective April 15, 2002.

Background

Development of actuarial standards of practice in the cash flow testing area was originally undertaken separately for the life and health and the property and casualty specialties. The first to be published was ASOP No. 7, *Concerning Cash Flow Testing for Life and Health Insurance Companies*. This was developed by the American Academy of Actuaries' Committee on Life Insurance Financial Reporting in conjunction with the Life Committee of the ASB, and was adopted by the ASB in October 1988.

Subsequently, the Casualty Committee of the ASB, through its Valuation Subcommittee, developed a proposed standard titled *Cash Flow Testing for Property and Casualty Insurers*. This draft was presented to the ASB in April 1990. The ASB decided that the document should be revised so that there would be one broad standard that would apply to life and health insurers as well as to property/casualty (P/C) insurers. A Joint Casualty/Life Cash Flow Testing Task Force was appointed by the ASB to accomplish this. The resulting standard was adopted in July 1991.

Further revisions to ASOP No. 7 are now being made for several reasons. First, practice in this area has evolved and this proposed revised standard reflects this evolution. Second, the National Association of Insurance Commissioners (NAIC) adopted two new model regulations, *Synthetic Guaranteed Investment Contracts Model Regulation,* and *Separate Accounts Funding Guaranteed Minimum Benefits Under Group Contracts Model Regulation*. These two model regulations contain language requiring that life insurers submit an actuarial opinion and memorandum

related to cash flow testing. Finally, the ASB has adopted a new format for standards, and this standard has been rewritten to conform to that new format.

In addition to ASOP No. 7, as part of the project to look at all cash flow testing standards of practice, ASOP No. 14 and ASOP No. 22 were also reviewed. Relevant portions of ASOP No. 14 were incorporated within the 2001 revisions of ASOP No. 7 and ASOP No. 22.

At its September 2001 meeting, the ASB voted to adopt the revised ASOP No. 7 and ASOP No. 22 and to repeal ASOP No. 14.

Exposure Draft

The exposure draft of this revised standard was issued in September 2000 with a comment deadline of March 31, 2001. The Cash Flow Testing Task Force carefully considered the twenty-one comment letters received. For a summary of the substantive issues contained in these comment letters, please see appendix 2.

The most significant changes from the exposure draft were as follows:

1. In section 3.10.1, Scenarios, and 3.10.3, Internal Consistency, a few changes were made for similar reasons to both sections to clarify the actuary's responsibilities. In 3.10.1(a), the actuary is now required to determine whether the tested scenarios reflect a range of conditions consistent with the purpose of the cash flows, and, if not, the actuary should disclose any material inconsistency in any report or communication. Similarly, in 3.10.3, the actuary is now required to determine whether the actuarial assumptions within each scenario are consistent where appropriate, and, if not, the actuary should disclose any material inconsistency in any report or other communication.

2. In section 3.10.2, Sensitivity Testing, a sentence was added noting that the further into the future that asset and policy cash flows are projected, the more potential there is for variability in future cash flows.

3. In section 4.3, Documentation, wording was added noting that the degree of documentation of the actuary's cash flow analysis will vary with the complexity and purpose of the job.

The task force thanks all those who commented on the exposure draft. The task force also thanks Susan Witcraft for her assistance in drafting this standard.

The ASB voted in September 2001 to adopt this standard.

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ACTUARIAL STANDARD OF PRACTICE NO. 7

ANALYSIS OF LIFE, HEALTH, OR PROPERTY/CASUALTY INSURER CASH FLOWS

STANDARD OF PRACTICE

Section 1. Purpose, Scope, Cross References, and Effective Date

1.1 Purpose—This actuarial standard of practice (ASOP) provides guidance to actuaries who perform professional services involving the analysis of asset, policy, or other liability cash flows for life, health, or property/casualty insurers.

1.2 Scope—This standard applies to actuaries when performing the analysis of part or all of an insurer's asset, policy, or other liability cash flows for life, health (including health benefit plans), or property/casualty insurers. Cash flow analysis subject to this standard should be considered in connection with professional services such as the following:

a. determination of reserve adequacy;

b. determination of capital adequacy;

c. product development or ratemaking studies;

d. evaluations of investment strategy;

e. financial projections or forecasts;

f. actuarial appraisals; and

g. testing of future charges or benefits that may vary at the discretion of the insurer (for example, policyholder dividend scales and other nonguaranteed elements of the insurer's liabilities).

This standard does not apply to cash flow testing performed for entities other than life, health, or property/casualty insurers, such as pension plans, retiree group benefit plans, or social insurance

programs.

When applicable law conflicts with this standard, compliance with such applicable law shall not be deemed a deviation from this standard, provided the actuary discloses that the cash flow analysis was performed in accordance with the requirements of such applicable law.

1.3 Cross References—When this standard refers to the provisions of other documents, the reference includes the referenced documents as they may be amended or restated in the future, and any successor to them, by whatever name called. If any amended or restated document differs materially from the originally referenced document, the actuary should consider the guidance in this standard to the extent it is applicable and appropriate.

1.4 Effective Date—This standard of practice is effective for actuarial work performed after April 15, 2002.

Section 2. Definitions

The definitions below are defined for use in this actuarial standard of practice.

2.1 Applicable Law—Federal, state, and local statutes, regulations, case law, and other binding authority that may govern analysis of insurer cash flows.

2.2 Asset—Any resource that can generate revenue or reduce disbursement cash flows.

2.3 Asset Risk—The risk that the amount or timing of items of cash flow connected with assets will differ from expectations or assumptions for reasons other than a change in investment rates of return. Asset risk includes delayed collectibility, default, or other financial nonperformance. This has been commonly referred to in actuarial literature as the *C-1 risk* or *credit risk*.

2.4 Cash Flow—Any receipt, disbursement, or transfer of cash.

2.5 Cash Flow Analysis—Any evaluation of the risks associated with the timing or amount of cash flows.

2.6 Cash Flow Testing—A form of cash flow analysis involving the projection and comparison of the timing and amount of cash flows resulting from economic and other assumptions.

2.7 Derivative Contract—Any security that derives its value from an underlying financial instrument. Examples include interest rate swaps, futures, and options.

2.8 Health Benefit Plan—A contract providing medical, dental, vision, disability income, accidental death and dismemberment, long-term care, and similar benefits, whether on a reimbursement, indemnity, or service benefit basis, regardless of the form of the risk-bearing organization, including benefit plans provided by self-insured plan sponsors.

2.9 Insurer—An entity that accepts the risk of financial losses or, for a specified time period, guarantees stated benefits upon the occurrence of specific contingent events, in exchange for a monetary consideration.

2.10 Investment Rate-of-Return Risk—The risk that investment rates of return will differ from expectations or assumptions, causing a change in the amount or timing of asset, policy, or other liability cash flows. This has been commonly referred to in actuarial literature as the *C-3 risk* or *asset/liability mismatch risk*.

2.11 Liability—Any commitment by, or requirement of, an insurer that can reduce revenue or generate disbursement cash flows.

2.12 Notional Asset Portfolio—A portfolio of assets, not owned by the insurer, which changes the risk characteristics of either the assets or the liabilities of the insurer.

2.13 Other Liability Cash Flows—Cash flows not specifically associated with asset or policy cash flows. Examples are corporate expenses, payables, surplus notes, shareholder dividends, or balance sheet items that result from litigation.

2.14 Policy Cash Flow Risk—The risk that the amount or timing of cash flows under a policy or contract will differ from expectations or assumptions for reasons other than a change in investment rates of return or a change in asset cash flows. This has been commonly referred to in actuarial literature as the *C-2 risk*.

2.15 Policy Cash Flows—All premiums and other amounts paid by policyholders or contract holders to the insurer and all benefits, expenses, and other amounts paid to policyholders or others as required by policy or law.

2.16 Scenario—A set of economic and other assumptions used in performing cash flow analysis.

Section 3. Analysis of Issues and Recommended Practices

3.1 Analysis of Insurer Cash Flows—The actuary may perform the analysis of part or all of an insurer's asset (including off-balance sheet asset), policy, or other liability cash flows.

3.2 Determining the Level of Analysis of Cash Flows—In deciding the level of analysis of insurer cash flows, if any, appropriate for the circumstances, the actuary should consider the type of asset, policy, or other liability cash flows and the severity of risks associated with those cash flows. As part of that consideration, the actuary should consider all material risks and options embedded in the asset, policy, or other liability cash flows. In addition, the actuary should consider the risks that are being undertaken and determine what types of deviations from expected experience should be taken into account, if any, given the purpose of the analysis.

3.2.1 Reasons for Cash Flow Testing—The actuary should consider cash flow testing when variations in the underlying risks are likely to have a material impact on the expected cash flows in certain products, certain lines of business, or on the company. Situations that might indicate a need for cash flow testing include the following:

a. where there are material asset risks (for example, below investment grade bonds, assets with payment timing risks such as CMOs or mortgage-backed securities, mortgages concentrated in certain regions of the country, and large illiquid assets such as real estate);

b. where there are liabilities that have cash flows far out into the future (for example, structured settlement annuities with a significant reinvestment rate-of-return risk);

c. where a company has a new or rapidly growing line of business; and

d. where options have been granted to policyholders or borrowers and the likelihood of antiselection in the exercise of these options is significant (for example, an annuity contract holder's option to surrender the annuity for cash at book value).

3.2.2 Cash Flow Testing is Not Always Necessary—Insurers are subject to different types and degrees of risk. The actuary may decide that the type or degree of risk does not warrant cash flow testing. Following are examples of situations where other types of analyses might be sufficient.

a. If the risks to be analyzed are products with short-term liabilities (for example, the vast majority of cash flows occurring within a few years) supported by short-term assets, these risks may be more appropriately analyzed through other means. The risks may involve a small number of large individual claims over a short-term period and may be better addressed using risk theory techniques.

b. If, in the actuary's judgment, a block of business, taken together with its policy term and the associated investment strategy, is relatively insensitive to influences

such as changes in economic conditions or interest-rate scenarios, the actuary may determine that cash flow testing is not necessary to support the opinion, report, or recommendation, and other methods may be sufficient.

c. If the risk being evaluated is unanticipated sources of significant claims (examples in the past include AIDS and asbestos), these risks may be analyzed with methods other than cash flow testing.

3.2.3 Use of Analyses or Data Predating the Analysis Date—If appropriate, the actuary may use analyses performed prior to the valuation date, an analysis performed at the time of policy issue, modeling based on data taken from a time that predates the analysis date, or other methods.

The actuary should document the reasonableness of such prior period data, studies, analyses, or methods, that key assumptions are still appropriate, and that no material events have occurred prior to the valuation date that would invalidate the analysis on which the actuary's opinion is based.

3.3 Identification of Assets—The actuary should identify which assets are included in the cash flow analysis.

3.3.1 Choice of Asset Subsets to Use—The same assets should not be improperly used to support different blocks of policy cash flows.

3.3.2 Notional Asset Portfolios—If the liability of the insurer is based on the performance of a notional asset portfolio, such as in the case of synthetic guaranteed investment contracts, the actuary should include the notional asset portfolio creating this liability in this analysis.

3.3.3 Other Assets—The actuary should consider whether policy loans, deferred premiums, and other policy-related assets should be included in the cash flow analysis.

3.4 Projection of Asset Cash Flows—In projecting an insurer's asset cash flows for a given scenario, the actuary should consider the assets of the insurer and the insurer's investment strategy.

3.4.1 Asset Characteristics—The characteristics of an asset affect the timing and amounts of its cash flows. The cash flows of some assets are relatively immune to external factors and can be predicted on the basis of asset structure alone (for example, high-quality noncallable bonds). The cash flows of other assets (for example, callable bonds, mortgage-backed securities, common stocks, derivative contracts, or premium receivables) are more sensitive to external events, and their analysis should be based on a combination of their structure

and external factors. The actuary should consider the following issues in making cash flow projections:

a. the sensitivity to economic factors, such as interest rates, equity, or other market returns, and inflation rates on the insurer's asset cash flows;

b. any limitations on the ability to use asset cash flows to support policy or other liability cash flows, such as when a block of assets is specifically held in support of a particular block of business by contract or regulation;

c. the impact on cash flow associated with asset quality as it relates to the risk of a delay in asset cash flows being collected, asset default, or other financial non-performance;

d. the associated costs of maintaining the assets or of converting the assets into cash when necessary;

e. the historical experience of similar assets, to the extent such experience is credible and relevant to the projection of future asset cash flows; and

f. other known factors that are likely to have a material effect on asset cash flows, particularly those factors that are likely to have an effect on asset risk or investment rate-of-return risk.

3.4.2 Investment Strategy—The actuary should consider the following in performing the cash flow analysis:

a. the insurer's strategy regarding the sale of assets prior to maturity;

b. asset segmentation in support of the insurer's policy cash flows;

c. the insurer's strategy regarding the sale of assets with a declining market value;

d. the insurer's strategy for the investment of future positive or negative cash flows;

e. to the extent the insurer's investment strategy contemplates borrowing to cover negative cash flows, whether the funds borrowed pursuant to the strategy are reasonable in relation to the insurer's existing indebtedness, borrowing capacity, and cost of borrowing funds;

f. the insurer's use of derivative contracts, including strategies to mitigate asset, policy, or other liability cash flow risk;

g. to the extent the insurer's investment strategy contemplates capital contributions from a parent or other source, whether the capital contributions can be sustained and are appropriate for the type of analysis;

h. the costs or gains due to asset, policy, or other liability cash flows denominated in foreign currencies; and

i. any other known factors that are likely to have a material effect on investment strategy or the insurer's ability to execute its investment strategy.

3.5 Projection of Policy Cash Flows—In projecting an insurer's expected policy cash flows, the actuary should consider the policy's cash flow characteristics as well as the insurer's policies concerning the management of its policy cash flows.

3.5.1 Policy Cash Flow Characteristics—The characteristics of a policy affect the timing and amounts of its cash flows. The actuary should consider the following factors in projecting policy cash flows:

a. the risk of insolvency or other nonperformance by providers of services, including reinsurers and other counter-parties;

b. the associated costs of maintaining, collecting, or paying out the policy cash flows;

c. the historical experience of similar policy cash flows, to the extent such experience is credible and relevant to the projection of future cash flows;

d. the effect of external factors such as interest rates, equity or other market returns, unemployment rates, and inflation rates on the insurer's policy cash flows;

e. the ability of the policyholder or other party to exercise options under the policy that have an effect on policy cash flows (for example, put options

subject to a predefined event occurring, or allowing the transfer of funds between contracts or funding vehicles);

f. the effect of changes in premium (for example, rate increases) or changes in other policy charges (for example, cost of insurance charges in universal life contracts); and

g. other known factors that are likely to have a material effect on policy cash flows, including off-balance sheet items.

3.5.2 Management Policy—The actuary should consider management policy concerning the settlement or payment of liabilities, and the effect that this management policy may be reasonably expected to have on the projection of policy cash flows. Considerations that might affect the projection include claim settlement and benefit payment practices, expense-control strategies, company philosophy relative to the determination of policyholder dividends, and charges or benefits that vary at the discretion of the company, as well as significant relationships between management policy and the scenarios analyzed.

3.6 Other Liability Cash Flows—The actuary should consider whether other liability cash flows should be included in the analysis being conducted.

3.7 Materiality—The actuary may determine that certain asset, policy, or other liability cash flows will not be analyzed if these asset, policy, or other liability cash flows may be reasonably expected not to have a material impact on the overall results. The analysis need not be refined if, in the judgment of the actuary, further refinement would not result in a materially different actuarial opinion, report, or recommendation.

3.8 Reinsurance—The actuary should consider whether reinsurance receivables will be collectible when due, and any terms, conditions, or other aspects that may be reasonably expected to have a material impact on the cash flow analysis.

3.9 Separate Accounts—The actuary should consider the effect of separate account asset, policy, or other liability cash flows on the general account. For example, the actuary should consider general account guarantees, recoverability of unamortized expense allowances, and allowable transfers between the separate account and the general account.

3.10 Modeling and Data— The actuary should select an appropriate model for the analysis being performed. When the asset, policy, or other liability cash flows being analyzed are represented by sample or hypothetical data, the cash flows used for modeling should be representative of the block of asset, policy, or other liability cash flows being analyzed and should be consistent with the

intended purpose and use of the analysis.

3.10.1 Scenarios—The scenario is a key element in the analysis of cash flows. Depending on the purpose of the analysis, more than one scenario may be used. Scenarios may be generated by either deterministic or stochastic methods.

a. Range of Scenarios Consistent with Purpose of Analysis—The scenario(s) to be analyzed may be specified by the client or employer, by applicable law, or by the actuary. The actuary should determine whether the scenarios analyzed reflect a range of conditions consistent with the purpose of the analysis of cash flows. If not, the actuary should disclose any material inconsistency in any actuarial report prepared pursuant to section 4.2, or in any other communication of the actuary's findings.

b. Number of Scenarios—Consistent with the purpose of the analysis, the actuary should consider a sufficient number of scenarios to reasonably represent the underlying variability of the asset, policy, or other liability cash flows.

3.10.2 Sensitivity Testing—The actuary should consider and appropriately address the sensitivity of the model to the effect of variations in key assumptions. For example, the further into the future that asset and policy cash flows are projected, the more potential there is for variability in the future cash flows. In determining whether sensitivity has been appropriately addressed, the actuary should consider the intended purpose and use of the analysis and whether the results reflect a reasonable range of variation in the key assumptions, consistent with that intended purpose and use.

3.10.3 Internal Consistency—The actuary should determine the following:

a. whether actuarial assumptions within each of the interest rate and other scenarios being analyzed are consistent where appropriate; and

b. that the actuarial assumptions, methods, or models used for different segments of business are materially consistent, and that any significant interdependencies are modeled appropriately.

If not, the actuary should disclose any material inconsistency in any actuarial report prepared pursuant to section 4.2 or in any other communication of the actuary's findings.

3.10.4 External Requirements—The actuary should consider how applicable law, and other external requirements relating to such things as financial statements and operating ratios,

federal income taxes, insurer capitalization, and distribution of an insurer's earnings to policyholders or shareholders are likely to affect future cash flows or constrain the range of possible scenarios. These factors should be appropriately reflected in the analysis.

3.10.5 Projection Period—The time period over which cash flows are projected should be consistent with the purpose of the analysis. Different blocks of business may require different projection periods. If the objective is to analyze cash flows over the entire life of the block of business, then the actuary should choose a time period over which the underlying asset, policy, or other liability cash flows are material. If the objective is to analyze cash flows over a period shorter than the entire life of the block of business, then the actuary should disclose the existence of possible material cash flows beyond such a time period in analyzing results.

3.10.6 Limitations of Models, Assumptions, and Data—Cash flow estimates can vary considerably as a result of the model used, the assumptions selected, and the data. When results are highly volatile, additional analysis may be appropriate.

3.11 Negative Interim Earnings—The actuary should consider the impact of any negative interim earnings during the cash flow projection period, if it is appropriate for the purpose of the analysis.

Section 4. Communications and Disclosures

4.1 Reliance on Others for Data, Projections, and Supporting Analysis—The actuary may rely on data, projections, and supporting analysis supplied by others. In doing so, the actuary should disclose both the fact and the extent of such reliance. Such disclosure may follow the forms prescribed in the applicable NAIC model laws and regulations. The accuracy and comprehensiveness of data, projections, or supporting analysis supplied by others are the responsibility of those who supply the data, projections, or supporting analysis. When practicable, the actuary should review the data, projections, and supporting analysis for reasonableness and consistency, and disclose such a review. For further guidance, the actuary is directed to ASOP No. 23, *Data Quality.*

4.2 Actuarial Report—If appropriate, given the purpose for which the cash flow analysis was performed, the actuary should issue a written actuarial report as a means of documenting the data, assumptions, techniques, and conclusions reached.

4.3 Documentation—The degree of documentation of the actuary's cash flow analysis will vary with the complexity and purpose of the analysis. The documentation should be more complete for more significant assignments such as regulatory cash flow testing than for other assignments such as periodic income projections.

The actuary should document the following, as appropriate, for the cash flow analysis being conducted:

a. whether any analyses performed prior to the valuation date were used, and, if so, the reasonableness of the prior period data, studies, analyses, or methods;

b. the purpose of the analysis and the risks analyzed;

c. the type of analysis performed (i.e., whether cash flow testing or some other method of analysis) for each block of business analyzed;

d. the results of the analysis;

e. the actuary's conclusions or recommendations, if any;

f. any conclusions or recommendations related to sensitivity testing; and

g. the data, assumptions, and methods used with sufficient clarity that another actuary qualified in the same practice area could evaluate the reasonableness of the actuary's work. The actuary should consider whether the documentation should contain the following:

    1. the asset characteristics;

    2. any limitations on the ability to use asset cash flows to support policy and other liability cash flows;

    3. the insurer's investment strategy;

    4. how the policy cash flow characteristics are reflected in the analysis, including the insurer's policies concerning the management of its policy cash flows;

    5. any cash flows not attributable to specific asset, policy, or other liability cash flows;

    6. whether any off-balance sheet items were included in the analysis;

    7. relevant cash flows within the scope of the analysis that were specifically excluded from the cash flow analysis due to immateriality;

    8 the characteristics of any reinsurance agreements, and how these were reflected in

the analysis;

9. the effect of separate account asset, policy, or other liability cash flows on the general account, such as general account guarantees;

10. the model used, including the sources of data and key assumptions;

11. the scenarios used, and the rationale supporting the methodology used to choose and develop the scenarios;

12. how any external factors were included in the analysis;

13. the time period over which cash flows are projected;

14. the existence of negative interim earnings and its effect on the analysis;

15. whether the actuary relied on asset cash flow projections or other analyses of assets supplied by others, and the extent of such reliance; and

16. any other data, assumptions, or other methods that are known to materially impact the analysis.

4.4 Conflict with Applicable Law—When applicable law conflicts with this standard, compliance with such applicable law shall not be deemed a deviation from this standard, provided the actuary discloses that the opinion was rendered in accordance with the requirements of such applicable law.

4.5 Retention—The actuary, to the extent practicable, should take reasonable steps to ensure that the documentation will be retained for a reasonable period of time (and no less than the length of time necessary to comply with any statutory, regulatory, or other requirements). The actuary need not retain the documentation personally; for example, it may be retained by the actuary's employer.

4.6 Prescribed Statement of Actuarial Opinion—This ASOP does not require a prescribed statement of actuarial opinion (PSAO) as described in the *Qualification Standards for Prescribed Statements of Actuarial Opinion* promulgated by the American Academy of Actuaries. However, law, regulation, or accounting requirements may also apply to an actuarial communication prepared under this standard, and as a result, such actuarial communication may be a PSAO.

4.7 Deviation from Standard—The actuary must be prepared to justify the use of any procedures that depart materially from those set forth in this standard and must include, in any actuarial communication disclosing the results of the procedures, an appropriate statement with respect to the nature, rationale, and effect of such departures.

Appendix 1

Background and Current Practices

Note: This appendix is provided for informational purposes, but is not part of the standard of practice.

Background

Actuaries have been performing financial projections for many years. Various cash flow elements have often been an integral part of these projections. The large increase in the level and volatility of investment rates of return since the 1970s caused significant swings in asset, policy, or other liability cash flows and present values. The sophistication of insurance products has increased during this time. In addition, fluctuating operating results have led to increased attention to improving the measurement of the financial security of insurers. As a result of these changes, cash flow analysis has become an increasingly important aspect of actuarial work.

Current Practices

Common approaches to cash flow analysis typically follow these steps:

1. identify which asset, policy, or other liability cash flows are to be included in the cash flow analysis;

2. select and validate models for asset, policy, or other liability cash flows;

3. select an appropriate scenario or set of scenarios, either deterministic or stochastic;

4. project the selected asset, policy, or other liability cash flows under each selected scenario; and

5. develop conclusions based on analysis of the cash flow projections.

There are variations on this process. For example, if cash flow analysis is used to analyze the effects of changes in investment strategy, specific assets may not be identified in the initial step of the process. It may be sufficient instead to analyze variations in asset portfolio characteristics such as yield and duration.

Cash flow analysis can be used in a variety of ways, such as analyzing the performance of a particular asset or product under certain specified scenarios or evaluating the solvency of the entire company. A

common current use of cash flow analysis is to meet the requirements of the NAIC's *Actuarial Opinion and Memorandum Regulation* (*AOMR*), including any variations to this regulation passed by a state in adopting the model.

Appendix 2

Comments on the Exposure Draft and Task Force Responses

The exposure draft of this revised actuarial standard of practice was issued in September 2000 with a comment deadline of March 31, 2001. (Copies of the exposure draft are available from the ASB office.) Twenty-one comment letters were received. The Cash Flow Testing Task Force of the Life Committee of the ASB carefully considered all comments received. Summarized below are the significant issues and questions contained in the comment letters and the task force's responses.

SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE	
Section 1.2, Scope	
Comment	A number of commentators asked for clarification whether the analysis can be for part of an insurer's asset, policy, or other liability cash flows. One commentator did not want the standard to allow testing of only assets or liabilities.
Response	The revised ASOP No. 7 allows testing of asset, policy, or other liability cash flows individually or only in part, as appropriate. The task force added wording in section 1.2 to clarify the point.
Comment	A few commentators believed that section 1.2 should specifically mention items that are relevant in today's practice, namely determination of capital adequacy (such as the C-3 RBC tests that were required for some companies for the first time in 2000) and determination of fair value.
Response	The task force agreed that capital adequacy is relevant for today's practice, but believed that fair value is not defined well enough, so the task force added only capital adequacy to the list of items.
Comment	A few commentators asked whether ASOP No. 7 was appropriate for property/casualty insurance and health benefit plans.
Response	The task force notes that a joint property/casualty and life task force originally developed ASOP No. 7, which continues to be appropriate for property/casualty work and for health benefit plans.
Comment	One commentator questioned the relevance of ASOP No. 7 for non-U.S. work.
Response	Annotation 3-1 of the Code of Professional Conduct requires the actuary to observe applicable standards of practice promulgated by a recognized actuarial organization for the jurisdiction in which the actuary renders actuarial services. ASOPs promulgated by the Actuarial Standards Board apply to actuarial services rendered in the United States. Actuarial services rendered in a non-U.S. jurisdiction would be subject to actuarial standards of practice promulgated by such jurisdiction's recognized actuarial organization, if any. Therefore, the task force made no change as a result of this comment.
SECTION 2. DEFINITIONS	
Section 2.2, Asset, and 2.11, Liability	
Comment	Many commentators offered suggestions for changing these definitions.
Response	The task force believes the definitions are appropriate. The definitions are consistent with those found in other standards, where practical. The definitions in ASOP No. 7 are for just this standard and are appropriate for this standard.

Section 2.5, Cash Flow Analysis, and 2.6, Cash Flow Testing	
Comment	One commentator did not like the distinctions made between "cash flow analysis" and "cash flow testing."
Response	The task force believes the definitions are appropriate, since ASOP No. 7 is now designed to make a hierarchy of types of analysis, with "cash flow analysis" being the most general term, and "cash flow testing" being one type of cash flow analysis.
Section 2.12, Notional Asset Portfolio	
Comment	A number of commentators suggested changes to this definition.
Response	The task force revised the definition in response.
Section 2.13, Other Liability Cash Flows	
Comment	One commentator noted that the term "other liability cash flows" was used, but not defined, in the exposure draft of ASOP No. 22. A commentator on ASOP No. 22 thought that the definition should include surplus notes.
Response	The task force agreed and added a definition of "other liability cash flows," which includes a reference to surplus notes, to both ASOP No. 7 and No. 22.
Section 2.15, Policy Cash Flows (previously section 2.14)	
Comment	One commentator noted that the definition did not treat premium taxes properly, as premium taxes are not paid on behalf of policyholders, but rather are paid as required by law.
Response	The task force agreed with this comment and changed the definition accordingly.
SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES	
Section 3.2.1, Reasons for Cash Flow Testing, and 3.2.2, Cash Flow Testing is Not Always Necessary	
Comment	A few commentators questioned the use of the phrases "long duration" and "short-term," and noted that these can have meaning in a GAAP context.
Response	The task force agreed that the use of those phrases could cause confusion in that regard and changed the wording.
Section 3.2.2, Cash Flow Testing is Not Always Necessary	
Comment	One commentator asked that the phrase "policy term" be included as part of what the actuary should consider as to whether a block is relatively insensitive to changes in economic conditions.
Response	The task force agreed and added words to accomplish this.
Section 3.2.3, Use of Analyses or Data Predating the Analysis Date	
Comment	One commentator believed that the actuary should consider future material events in the analysis.
Response	The task force disagreed, believing such a thing is beyond the scope of cash flow analysis.
Section 3.5.1, Policy Cash Flow Characteristics	
Comment	One commentator asked that the issue of changes in the premium scales be included explicitly.
Response	The task force added section 3.5.1(f), which specifically identifies changes in premiums and other charges as items for the actuary to consider.

Section 3.7, Materiality	
Comment	A few commentators wanted further guidance on materiality. Several asked that materiality be mentioned in specific sections.
Response	The task force believes that more detailed guidance on materiality is beyond the scope of this standard. The task force notes that the guidance in section 3.7 is applicable to the entire standard, so it did not add specific mentions in other sections.
Section 3.8, Reinsurance	
Comment	One commentator asked whether section 3.8 differed from section 3.5.1(a).
Response	Section 3.5.1(a) specifically deals with policy cash flows, while section 3.8 is broader than that. The task force made no changes to either section.
Section 3.9, Separate Accounts	
Comment	A few commentators wanted more detailed guidance on treatment of flows between the general account and the separate account.
Response	The task force believes that the level of guidance in this section is appropriate. However, the task force agreed with a comment that the actuary should consider whether certain cash flows between the general and separate accounts were allowable, and changed the wording accordingly.
Section 3.10.1, Scenarios	
Comment	A number of commentators questioned the use of the word "often" in the sentence, "Often, more than one scenario will be analyzed."
Response	The task force removed the word "often" and substituted the words "depending on the purpose of the analysis."
Comment	Regarding 3.10.1(b), Number of Scenarios, one commentator wanted more detailed guidance on the number of scenarios. Another commentator wanted words that put less emphasis on the investment rate of return being the key item of interaction with asset, policy, or other liability cash flows.
Response	The task force believes that the level of guidance on the number of scenarios is appropriate. The task force did change this section to put less emphasis, when choosing the number of scenarios, on whether asset, policy, or other liability cash flows vary with investment rates of return.
Section 3.10.2, Sensitivity Testing	
Comment	A few commentators noted the issue of cash flows being more uncertain the further into the future a projection is done.
Response	The task force agreed and added words to section 3.10.2, noting more potential for variability the further into the future the cash flows are projected.
Section 3.11, Negative Interim Earnings	
Comment	One commentator mentioned that negative interim earnings were an accounting issue and that, therefore, this section should be eliminated.
Response	The task force disagreed. This section emphasizes the point that, if appropriate for the purposes of the analysis (for example, an asset adequacy test), the actuary should consider whether negative earnings in some years (the typical concern being the early projection years) affect whether future positive earnings in other (typically, later projection) years can be realized; i.e., the block tested may require the infusion of additional funds before the positive earnings years start. The task force agreed that in some types of analyses (for example, pricing and analyzing a new block of business where the company has significant surplus) the consideration of negative earnings may not be appropriate.

SECTION 4. COMMUNICATIONS AND DISCLOSURES	
Section 4.1, Reliance on Others for Data, Projections, and Supporting Analysis	
Comment	One commentator noted that wherever the term "data" was mentioned in terms of an actuary reviewing and using the work of others, it was more appropriate to use the more comprehensive terminology "data, projections, or supporting analysis."
Response	The task force agreed and made the recommended change.
Section 4.3, Documentation	
Comment	Some commentators believed that section 4.3 should be more general and not contain a list of items needing documenting, while others liked the guidance a list gave.
Response	The task force agreed to keep the list, but shortened the descriptions of some of the items.
Comment	A few commentators noted that the amount of disclosure should vary based on the complexity of the project.
Response	The task force agreed and added wording to note this.
Comment	One commentator noted that a disclosure item should be added for analyses performed prior to the valuation date.
Response	The task force agreed and added what is now section 4.3(g).
Comment	One commentator noted that section 4.3(g)(15) (previously section 4.3(u)) on documentation of negative interim earnings should be modified to note that this should be done only if appropriate for the analysis.
Response	The task force believes this issue is covered by other wording in section 4.3, which notes that documentation should be appropriate for the analysis being done.
Section 4.5, Retention	
Comment	One commentator noted that there should be a section on document retention.
Response	The task force agreed and added a new section 4.5, Retention.